

ABSTRACT OF THE DISCLOSURE

Optical systems such as, for example, optical switches, are disclosed comprising a solid component and a refractive index-matching liquid composition interfaced with the solid component. The liquid composition has a refractive-index that is substantially equal to that of the solid component. In one approach the liquid composition is a saturated cyclic compound consisting essentially of carbon and hydrogen and optionally oxygen such as, e.g., cyclic alkanes, alcohols or ketones. In another approach the liquid composition is benzene substituted with one or more electron-donating groups attached directly to the ring and one or more fluoro groups attached to the ring or to the electron-donating groups. In yet another approach the liquid composition is a combination comprising one or more of benzene or substituted benzene and optionally at least one of an alkane or substituted alkane having a boiling point less than about 130 °C. Also disclosed are methods for preparing a liquid composition having a predetermined refractive index at a predetermined temperature and methods for transmitting optical signals.